F.D.R. Requests $2,477,000 for Ultra-High Frequency Ranges

THE AIR LINE PILOT

Vol. 10—No. 1 Published by The Air Line Pilots Association, International, 3145 W. 63rd St., Chicago, Ill. February 1941

UNIVERSITY APR 9 1941

Start Employment Agreement Conferences with National Airlines

LATE NEWS IN BRIEF

Missing

Former Secretary of the Air Line Pilots Association, Usher E. Rousch,, and another American pilot, Lynn Berkenkamp, both employed by TACA air lines, are reported missing in dispatches from Managua, Nicaragua. Line officials reported on April 7 that no word had been heard from the pilots since leaving on a flight on April 4 over jungle country between Puerto Cabezas and Alamicambra.

Change

It has been reported that Western Air Express Corporation will shortly change its name to Western Air Lines, Inc., the reason being that the name Western Air Express Corporation is often confused with Transcontinental & Western Air, Inc. A short time ago, Boston-Maine Airways, Inc., changed its name to Northeast Airlines, Inc.

Time

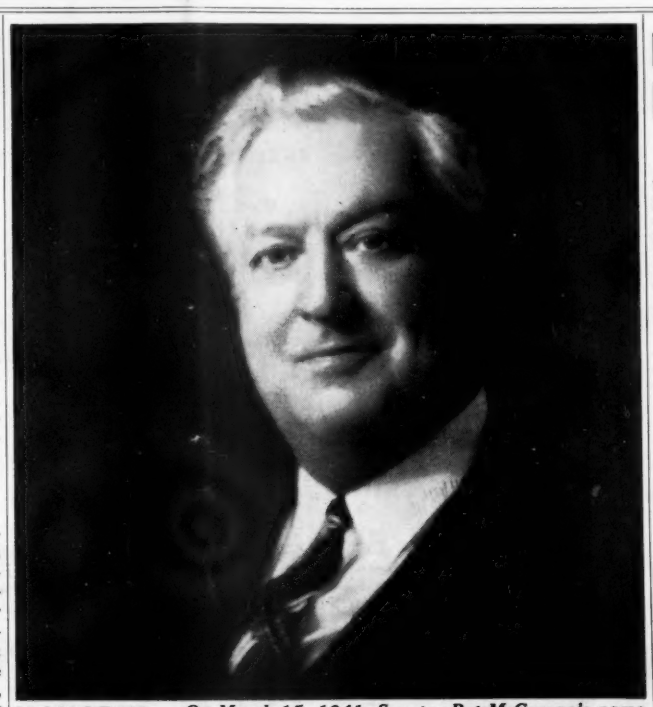
According to Pan American Airways officials, TIME magazine is planning to publish soon "the world's first plane-delivered magazine." It will be printed for distribution to many Latin-American points, and special lightweight paper stock will be used to bring down air-mail delivery costs. This lightweight edition of TIME will be identical to the issues currently distributed in the States except that the advertising space will be sold separately. This is truly an epochal departure that

(Continued on Page 7, Col. 1)

IN COMEBACK

—*International News Photo*

"Thumbs up" is the way Ace Rickenbacker greeted the world recently in the comeback fight he is waging at the Piedmont Hospital, Atlanta, Georgia. "Rick" is reported out of danger from serious injuries received as a result of an accident that occurred near Atlanta on February 27. Anxious days throughout the industry followed this unfortunate happening and from air line president to wiper, the question was always the same, "How's Eddie?" All are glad that a top-bracket battler is making a top-bracket comeback. Uncle Sam can ill afford to lose men of this caliber, especially now.



HONORED ***On March 15, 1941, Senator Pat McCarran's name was etched deeply into the annals of aviation posterity when the new $4,000,000 airport at Las Vegas, Nevada was named "McCarran Airport" in his honor. Many notables attended the dedication including Nevada's senior Senator, "Pat," himself. No recognition has ever been more deserving for unprecedented achievements, unselfishly accomplished, to place American flying uppermost in the world of aviation.***

HIGH FREQUENCY APPROVAL SOUGHT

Commenting upon President Roosevelt's recent request to Congress for an appropriation of $2,477,000 to permit the CAA to install ultra-high frequency radio ranges, and radio landing systems, at various points throughout the country, Gen. Donald H. Connolly, Administrator of Civil Aeronautics, said that the ultra-high frequency range was the result of development during the past four years by the Radio Technical Committee for Aeronautics, made up of representatives of the Army, Navy, Coast Guard, F.C.C., Bureau of Standards, radio manufacturers, scientific institutions, CAA, and the air carriers.

Ready for Use May 1

He said that the first range system operating on these frequencies, which are remarkably static-free and free from any tendency to split into multiples, would be ready for scheduled air line use on May 1. Special equipment is being installed in the transport planes which will use this route on and after that date.

New York-Chicago Airway 1st Link

The New York-Chicago airway is the first link in what the CAA technicians hope will be the eventual conversion of the entire 35,000 miles of Federal airways from intermediate frequencies in the 200-400 kilocycle band to ultra-high frequencies between 119,000 and 126,000 kilocycles, Gen. Connolly said.

Elimination of Static Interference

Utilization of ultra-high frequency radio waves not only eliminates interruptions due to static interference inherent to the low frequencies, but assures uniform-

(Continued on Page 7, Col. 3)

Congressional Air Accident Queries Begin

The unfortunate string of accidents which has overtaken the air lines in recent months has had its repercussions in Congress. Senate Resolution 307 introduced by Senator Pat McCarran and approved by the Senate will be acted upon in the near future. Senator Bennett C. Clark called an executive meeting of his investigating committee as soon as disposition was made of the Lease-Lend bill.

House Votes $10,000 to Defray Expenses

Immediately following the Eastern Air Lines accident a considerable number of resolutions calling for an investigation were introduced in the House. H. Res. 125 introduced by Congressman Jack Nichols of Oklahoma has been approved and the sum of $10,000 has been voted to defray expenses.

Special Investigator Appointed By Senate Committee

Following the executive meeting of Senator Clark's Senate committee, the appointment of Lieutenant Carl B. Harper, U.S.N., retired, as special investigator for the committee was announced. Lieut. Harper, who previously aided Senate committees notably in the investigation of the plane death of Senator Bronson Cutting and in the drafting of the Civil Aeronautics Act, will start immediately on his investigation. Senate hearings will be held up until he is ready to make his first report.

Senate Committee Members

The Senate subcommittee conducting the investigation is as follows: Bennett Champ Clark (D) of Missouri, Chairman; Hiram Johnson (R), of California; Josiah W. Bailey (D), of North Carolina; John H. Overton (D), of Louisiana; Harold H. Burton (R), of

(Continued on Page 3, Col. 2)

Pilots' Active Duty Deferred

Induction of key personnel of the air lines into military service is being deferred by the War Department, N.A.A. is advised by a letter from Major General George H. Brett, Acting Chief of the Army Air Corps, who stated:

Air Reserve Officers Placed in War Department Reserve Pool

"In reply to your letter of January 23, 1941, the Secretary of Commerce transmitted to the War Department lists of Reserve Officers, who occupy key positions with the air lines, with a request for the deferment of active duty for these officers. The Secretary of War replied to the Secretary of Commerce in a letter dated February 5, 1941, to the effect that the request for deferment of active duty for these officers had received his approval and that they have been transferred to the War Department Reserve Pool.

"Additional requests for deferment of active duty of key personnel of the air lines, forwarded to the War Department by the

(Continued on Page 7, Col. 2)

Substantial Gains During January

Operations figures reported by the domestic air lines for the month of January 1941, reflected substantial gains over January a year ago, according to statistics made public by Donald H. Connolly, Administrator of Civil Aeronautics.

General Connolly said that the 16 reporting air lines increased their revenue passengers 29.92 per cent, while revenue miles kept pace with a 22.26 per cent increase and revenue-passenger miles 25.01 per cent, during the 31-day period. At the same time figures for air express climbed 36.01 per cent, and express pound miles 35.21 per cent over the totals recorded in January 1940.

Final Domestic Contract in Mill

After several short meetings, employment contract conferences will finally get under way in earnest between National Airlines, Inc., and its pilots on April 14.

14 Employment Contracts Signed

Fourteen domestic contracts have been signed. Only two remain incomplete — Eastern and National. EAL's contract is very nearly completed, and the signing has been deferred only because of unfortunate incidents over which

(Continued on Page 8, Col. 2)

Lightning Hits British Raider

The question of lightning striking or in other ways causing damage to aircraft in flight, and possible disablement of flight crews, has long been a subject of much controversy and heated debate. The following are interesting excerpts from a recent press release from London, which present some very illuminating and informing high lights on the subject:

"Pilots returning from the Wilhelmshaven foray, termed 'highly successful' though lighter than the previous night's assault, declared they flew through 'ghastly' static and lightning storms which in one case set a bomber afire.

"Bomb wracks, gun turrets, cockpit windows, and instruments were frozen up again and again.

"Despite this weather, the air ministry said the attack was 'steady and hard' and 'many fires soon sprang up and were methodically increased.'

"An earlier communique said the railroad station and oil storage tanks were in the blazing area.

"The second pilot of the bomber struck by lightning was dis-

(Continued on Page 3, Col. 2)

—*Acme Photo*

STARS **Notable stars from the field of labor and the stage, President William Green, A. F. of L., and Sally Rand, met recently in Florida while attending an open-air affair at which Miss Florida of 1941 was selected. Florida turned on the sunshine and Sally turned on her charm, and William gets an eye and an earful.**

THE AIR LINE PILOT

Vol. 10—No. 1 289 February 1941

Published monthly by the Air Line Pilots Association International

Affiliated with A. F. of L.

Annual Subscription $2.50

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Entered as Second Class Matter March 11, 1933, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879.

Editorial Offices:
3145 W. 63rd St., Chicago, Ill. Telephone Hemlock 5015

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"Public Safety calls for pilots of high character and great skill. The occupation is a hazardous one. Therefore, the law should provide for a method to fix maximum flying hours, minimum pay and a system for retirement or annuity benefits."
—President Roosevelt.

CONTRIBUTING CAUSES

An accident seldom happens that is due to just one cause. There is usually more than one reason for an accident—in fact, such an incident, whether it be in the air, on the rails, or waterways, is very rarely due to one cause.

Many of us with a sprinkle of gray can well remember when we were barefoot boys how we used to hear of early-day railroad wrecks and, that more than likely it was always supposed to be the engineer's fault. Maybe that is why many of us picked the railroad engineer as our hero. Why not? Wasn't he the nerve center of the giant locomotive that rushed swiftly by to faraway places that were the tomorrows of our boyish dreams?

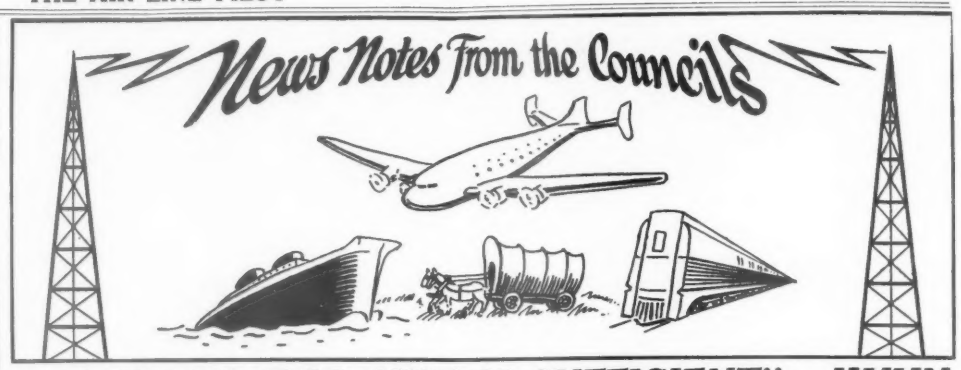
To cinch the greatness of the engineer in our youthful minds, we had merely to reflect, "Wasn't he the one who usually got the blame when something happened?" That certainly was convincing. As a matter of fact, even in old-time railroad accidents, the blame was very seldom entirely that of the engineer and, quite likely, he was more often blameless than rightfully the blame.

If it were possible to ascertain the truth at this late date, it would, in all probability, be established that early railroad accidents were due to improper aids, insufficient aids, faulty procedures, and all of the other things that amounted to the growing pains of the railroads.

Finally, we began to hear less and less about the engineer's being at fault when an accident occurred. Obviously, all concerned realized that in order to create real railroad safety, all of the contributing causes to an accident would have to be carefully eked out, recognized, and eliminated. The evolution of this process speaks for itself. We no longer see blazing headlines, "Engineer Blamed," when a train is involved in an unfortunate incident.

Why can't we take a page from the same book and stop doing what we all know is wrong when an air accident occurs—blaming the pilot. Let's try to understand the underlying and basic problems of air safety, recognize *all* the contributing causes of an accident, establish *all* the contributing causes, and eradicate them. Why not begin with the very simple ones? For instance, give the pilot who is always to blame a precipitation-free windshield so he can see to land his craft under conditions of low visibility in bad weather without serious vision impairment. To merely blame the pilot is as outdated and antiquated as yesterday's newspaper. Why not recognize this obvious fact and go forward instead of standing still and dealing in innuendoes? Maybe we're not all always right but, at least, let's be constructive.

—David L. Behncke



"A HINT TO THE WISE IS SUFFICIENT"—KUHN

By D. B. KUHN
Council No. 25, TWA
Chicago, Ill.

Since they do not make golf balls red, or other colors to contrast with spring snow, the bowling alleys have been taking their share of unspent energies hereabouts. The golfers find that bowling can produce hooks, slices, and dubs. But there is one young man, name of Urban Kampsen, who seems to have a groove worn down the alley to pin number one. So be advised, go easy on the bets when rolling against him.

"A Hint to the Wise (Or Otherwise) Is Sufficient"

We welcome Mr. Ben Dally to our ever-growing ranks. He comes to us from New York and assumes the role of flight superintendent and pilot. On his days off, he bravely tackles the task of scheduling crews. All goes well until one or two junior pilots come in and pound the desk for more night time. The frequency of these visits is causing Mr. Dally to see pink already. "A hint to the wise (or otherwise) is sufficient."

Bloody But Unbowed McKissack on the Mend

We report that Tom McKissack is bloody but unbowed. After recovering from a major operation and fighting off the flu, he sustained a nasty fall on icy pavement. The fractured skull could have been serious to anyone with but the sternest of stuff. "Mac" has taken all in stride and is on the mend. His headache is lessened by a fat accident policy he is holding.

Bad Weather—Decreased Activities—Increased Poundage

The decreased activity, due to weather cancellations, has caused many of us to acquire extra poundage . . . which will serve us well, come the lean years after the war. Our old buddy, Jackson Southard (of Boys Town), is one carrying weight in this community. At his domicile, there are three boys and a boy dog. Not bad! No connection, but he is a kindred exponent of the "fluid drive." The merits of fluids have so impressed him that he had a fluid drive installed on his car.

Scribe Believes Prayers Should Be For the Living—Believe You've Got Something There, Pal

In reading the Constitution and By-Laws of the Air Line Pilots Association, we are a bit perplexed by No. 3 of Article II, Section 9, Order of Business. No. 3 says: "Prayer for the Deceased Members." It is my opinion that the live members are in more need for divine guidance than the dead. Most tombstones assure us of "AT PEACE" or "AT REST" while, with war coming on, the living can boast neither.

Safety Resolution

Our convention approved, and all of us endorsed, the resolution to support any legislation to return the CAA and Safety Board to an independent status. It's my opinion that the majority of pilots do not attribute the recent crashes to the abolition of the Safety Board. We feel that our independent CAA and Safety Board would present facts about crashes, with valuable recommendations to prevent recurrences.

Come see me.

'MASS HYSTERIA' HITS FT. WORTH

By C. M. HEFNER
Council No. 19, AA
Ft. Worth, Texas

Up to the present time, the flight personnel of American Airlines has always been able to look to Ft. Worth as a friendly place to people of the air line variety who, like nomads, must frequently fold up their tents and go trucking away. Ft. Worth has always had a generous number of vacant houses and apartments for rent at a reasonable figure. But those days are a cherished memory.

Landowners Chuckle with Glee at News of Coming Boom

Two months ago, the War Department announced that Ft. Worth had been selected as a site for the construction of an assembly plant for Consolidated bombers. Mass hysteria clutched the minds of the people on the very day and has been building up in a mighty crescendo ever since. Old settlers are comparing the coming days to the boom days of the 1900's when the stockyards came to Ft. Worth. Figures on the coming increase in population are certainly enough to make any landowner chuckle with glee. The plant is supposed to employ around 15,000, bringing an estimated increase of 50,000 in the population of Ft. Worth, which includes the families and the attendant merchants.

Like a Shot in the Arm to One Already Drunk with Joy

Increases in real estate values were already on the way up before this ever happened. The announcement was like a shot in the arm to a person already drunk with joy. All decent places that were for rent are now up for sale with a nice fat figure tacked on. The general attitude of every owner is: "Why should I bother with you, when I can get double prices this summer?"

What Shape Will the Carcass Be in When the Shot Wears Off

But like every shot in the arm, the effects are going to wear off and it's hard to tell in what shape the carcass will be when that happens. The plant is to be built and financed by the government. Henry Ford is to build the parts in Detroit, send them to Ft. Worth, and Consolidated is to assemble the ship. In the estimation of every man who knows aircraft manufacturing, the plant is purely a war project and will be discontinued when the urgent need for bombers is over. But you can't make a person in Ft. Worth believe that. To them, it's here for good.

Delayed Delivery of DC-4's Might Be a Blessing in Disguise

Incidentally, the bomber that Consolidated is building is something worth looking over. It is a four-engined landplane with tricycle landing gear and possesses excellent performance. I was talking to one of Consolidated's officials the other day and it is now the intention of the company to bring out this same type ship in a commercial version after the war is over. The fact that a Davis wing is being used might give the

(Continued on Page 4, Col. 3)

"To fly West, my friend, is a flight we all must take for a final check."

In Constant Memoriam

Active

Accidental

Adams, John B.—U. A. L.
Anderson, Lloyd,—U. A. L.
Andert, Paul A.—U. A. L.
Barron, John M., Jr.—A. A.
Bickford, L. A.—Panagra
Bigelow, Ed.—U. A. L.
Blom, Edwin W.—U. A. L.
Bogen, W. L.—W. A. E.
Bohnet, Frederick L.—T. W. A.
Bolton, Harvey F.—T. W. A.
Bontrager, C. M.—R. A. L.
Borchers, Adrian—P. A. A.
Bowen, J. E.—T. W. A.
Bowen, Lewis L.—B. A.
Brandon, James L.—U. A. L.
Briggs, Francis W.—A. A.
Broughton, D. E.—U. A. L.
Brunk, Paul S.—P. A. A.
Bucher, Charles L.—P. A. A.
Chamberlain, Cassius B.—N. W.
Cohn, Hanley G.—W. A. S.
Cope, Alonzo—Marine Airways
Cox, Floyd—Ludington
Davis, Alfred W.—U. A. L.
Davis, Douglas—E. A. L.
DeCesare, Frank—Panagra
De Cesaro, Joseph G.—U. A. L.
Dietz, Stuart G.—E. A. L.
Dixon, Andrew, Jr.—D. A. L.
Dunn, Stephen—Panagra
Fey, Howard—U. A. L.
Fields, Glenn T.—A. A.
Fuller, Ray E.—A. A.
George, Hal—T. W. A.
Grover, R. Boyd—U. A. L.
Haid, Arthur A.—N. W.
Hale, S. H.—E. A. L.
Hallgren, W. A.—A. A.
Hill, George W.—A. A.
Holbrook, Clyde M.—A. A.
Holsenbeck, W. M.—P. A. A.
Jamieson, W. L.—E. A. L.
Jones, Lloyd E.—U. A. L.
Kelsey, Harold J.—A. A.
Kincanon, Ted N.—A. A.
King, George B.—P. A. A.
Komdat, Albert C.—E. A. L.
Lewis, Harry C.—T. W. A.
Livermore, Joe—N. W.
Lucas, Al—W. A. S.
Lucas, Verne—Ludington
Lynn, John B.—C. & S. A. L.
McMickle, Harold—Panagra
Malick, Forrest E.—U. A. L.
Mamer, Nick B.—N. W.
Marshall, Gerald V.—A. A.
Merrifield, Austin S.—U. A. L.
Montee, Ralph—T. W. A.
Montijo, John G.—V. A. T.
Morgan, Howard R.—T. W. A.
Mossman, Russell C.—C.&S.A.L.
Neff, Harold—U. A. L.
Noe, Earl J.—T. W. A.
Norby, Raymond B.—N. W.
Odell, M. T.—A. A.
Owens, Clifford P.—W. A. E.
Paschal, A.—P. A. A.
Perry, J. E.—E. A. L.
Person, Addison G.—P. A. A.
Potter, Norman W.—U. A. L.
Pursley, C. H.—Panagra
Radoll, R. W.—U. A. L.
Riggs, Russell S.—A. A.
Robbins, Wm. J. B.—A. A.
Rose, John A.—K. L. M.
Rousch, Chas. W.—N. W.
Rust, F. H.—A. A.
Salisbury, Hervey M.—T. W. A.
Sandblom, J. V.—C. P.
Sandegren, Thomas E.—U. A. L.
Sauceda, J. M.—P. A. A.
Scott, P. T. W.—T. W. A.
Scott, Philip C.—U. A. L.
Scroggins, Lowell V.—P. C. A.
Sharpnack, J. W.—U. A. L.
Sheets, Don W.—Panagra
Sherwood, George C.—W. A. E.
Supple, Robert E.—Panagra
Tarrant, Harold R.—U. A. L.
Terletzky, Leo—P. A. A.
***Thomas, L. E.—E. A. L.**
Thompson, A. R.—U. A. L.
Underwood, Sanford L.—A. A.
Vance, Claire K.—U. A. L.
Waldron, Joe—A. A.
Walker, M. A.—P. A. A.
Wallace, Clyde W.—T. W. A.
Weatherdon, Edwin—A. A.
West, F. W.—N. W.
Wieselmayer, Otto—P. A. A.
Williamson, P. B.—E. A. L.
Worthen, John A.—W. W.
Young, George S.—U. A. L.
Zeier, Carl F.—C. & S. A. L.

Natural

Blomgren, Lloyd I.—A. A.
Cochrane, Robert M.—U. A. L.
Fife, John A.—C. A.
Hohag, R. J.—N. W.
McConaughey, Ira M.—A. A.
Phelps, Henry T.—P. A. A.
Swanson, Axel—A. A.

Inactive

Anderline, Frank W.; Ashford, Ted; Barr, Julius; Burford, Dean W.; Caldwell, G. Q.; Drayton, Chas. M.; Hulsman, Herbert W.; Noyes, Dewey L.; Ormsbee, F.; Riddle, Glenn L.; Shelton, Boyd M.; Stark, Howard C.; Veblen, E. H.; Walbridge, Donald C.; Wheaton, Harold H.; Whittemore, Fred W.; Wolf, John F.; Willey, Sidney L.

Waiting List

Brock, Wm. S.; Kiser, Daniel.

Unemployed

Darby, James E.; Downs, Lloyd; Hays, George L.; Keadle, Floyd E.; Rhiner, L. H.

Honorary

Rogers, Will

* *Apprentice Member.*

COMBINED EFFORTS TOTAL ZERO-ZERO

By BEN F. JONES
Council No. 37, PAA-Brazil
Rio de Janeiro, Brazil, S. A.

This council has not been very well represented in the *AIR LINE PILOT* for about two years. During that time there were two officially appointed scribes whose combined efforts totaled zero-zero. Possibly the thought of a one-year literary assignment is enough to throw many a good pilot into a mental fog which halts all operations. To prevent such a continued blockade, we are giving our council a new deal in which the newsletter assignment is rotated among the council members and a better score is anticipated.

The Souse American Way

When this scribe first started flying south of the Rio Grande, among the many things which impressed him were habits and haunts of his touring countrymen in foreign ports. In Mexico, for example, the best way to locate said countrymen, was to walk along the street until you heard a mariachi orchestra (Mexican hillbillies) raising the roof in a cantina. There you would find said turista doing his full share of the hoisting, and threatening to buy out the joint at the turn of a Mexican jumping bean.

Good Markets South of the Border

Now, a different type of Norte Americano is journeying southward. Businessmen from the States are beginning to learn that there are good markets south of the border. American products are in demand as shown by the high percentage of US-made automobiles. The South American people want to do business with the States, but business is a reciprocal proposition like the Good Neighbor policy. We ride in American automobiles with our gaucho friends in Argentina, but have *you* ever eaten an Argentine steak? Few Americans have because we legislate against its importation. Not only are we depriving ourselves of fine quality beef at a fair price, but we are slamming the door in the face of a neighbor who wants reciprocal, not one-way trade with us.

Gets 30 Days on the Ground to "Quench His Thirst"

On a recent trip to Buenos Aires while approaching the runway with wheels and flaps down, a flying club plane cut across our bow and landed. We went around again rather than land the DC-3 on the back of his neck. When we asked the DAC inspector if that were how traffic was handled down Argentine way, he said it was a special case. The student had explained that he saw us but he was just completing a very long flight (two hours) and was so thirsty that he could not wait for the air liner to land first. So, the DAC inspector pinched his license and gave him thirty days on the ground to quench his thirst.

Competition for Engineer Gorman

Down here in Rio, we miss a lot of interesting developments being made by aeronautical science in the States. Once in a while, we see pictures of a new one which leaves a haunting memory. Recently, we saw a picture of a loose formation of spare parts which had oozed its way vertically into about ten feet of sky. It was flying low and slow with no need to throttle back for the corners on account it could go ahead backing up. It was a helicopter, but in general design it looked like some airplanes of not too ancient vintage. The most impressive thing about the contraption was the fact that it had wheels. Now if the craft will actually ascend and descend vertically and land at zero forward speed as claimed, why not conserve weight by taking off the wheels and using

(Continued on Page 5, Col. 5)

Congress Investigates

(Continued from Page 1)

Ohio; and Mon C. Wallgren (D), of Washington.

House Committee Members

On March 12, Speaker Sam Rayburn of the House appointed Representative Jack Nichols of Oklahoma, chairman of its special committee. With Nichols were appointed Herron Pearson (D), of Tennessee; Richard M. Kleberg (D), of Texas; Everett M. Dirksen (R), of Illinois; and Carl Hinshaw (R), of California.

Rep. Nichols to Inspect Air Lines

Soon after his appointment, Rep. Nichols announced that members of the committee would make personal investigations of the air crashes and the general conduct of the air lines. He further stated that the committee may hire an investigator thoroughly versed in the technical side of aviation but the actual investigation will be handled by members of the committee. Definite plans have not as yet been made.

Lightning—

(Continued from Page 1)

abled and the aerial of another raider was hit by a bolt.

"A comrade of the injured pilot reported:

'Enormous amounts of static made the radio absolutely useless and for two hours blue flames (probably St. Elmo's fire) cracked all over the machine.

'Just before we reached Wilhelmshaven, there was a small flash inside the aircraft followed by a blinding burst. Flame shot from one end of the aircraft to the other and blue flames were sparking off airscrews.

'The climax came when the plane was struck in front (by lightning). The front turret must have taken the full force of the flash. I could not see for several minutes. Everything was a purple haze.

'Through the side window I saw a flame coming up so we bombed some guns and turned back for home. We landed at the base with the aircraft still coated with ice.'"

Hillman Opposes Longer Week

Sidney Hillman, National Defense Commissioner representing labor, has been adamant in his stand that working hours shall not be increased beyond established limitations, such as the 40-hour week, etc. In this stand he has the backing of President Roosevelt who made it clear when he launched the current preparedness program that the social gains of the country's workers should not be wiped away and should be maintained. The general policy of the present administration seems to be to speed up production by first putting the country's millions of unemployed to work, which is nothing more than exercising plain, common sense.

Shorter Hours Result in Greater Efficiency and Productivity

According to Hillman, all efforts to modify the 40-hour week or any other working hour limitation will be strenuously opposed with two principal arguments: (1) That, in cases where speed is necessary in a defense contract, labor may be allowed to work longer hours providing they are paid time and a half for overtime and double time for holidays. He makes the point that a shorter workday, plus overtime pay, is most advantageous to the workers because it raises their standards of living and because it results in higher productivity from their labors. (2) At the same time, he points out that it is his strong belief that the efficiency and productivity of labor generally are maintained at a much higher level if working hours are kept down. Again this contention is nothing more than good, plain, common sense.

PAA Trains Avigator Cadets

Training of flight navigation cadets for assignment to combat squadrons as members of crews in flying fortresses and other types of long and medium range bombers is being conducted by Pan American Airways through the cooperation of the War Department, it was announced recently.

The program which is to be carried out over a period of 14 months calls for the training of 850 civilians, aged 20 to 27, in long-range flight navigation. The first class started training August 10 at Miami, Fla., where training headquarters have been established.

PAA Furnishes Instructors and Flight Training Facilities

"Pan American Airways is providing the instruction and all necessary flight-training facilities on a nonprofit contract basis," a statement from the War Department said. "It is using some of its most experienced personnel, taken from transoceanic and other operating divisions, to act as instructors. Miami was selected because of the weather conditions that permit twelve months of flying during the year and also because it is the location of the Pan American Airways System base school, which has been the company's primary training ground for the development of transoceanic captains and other flight captains who are in the crews of the transoceanic clippers."

Air Corps Officers to Supervise Cadets

Army Air Corps Officers are supervising the cadets and are housed with the cadets in quarters made available by the University of Miami. Classrooms are also provided by the university. Students are being selected in a similar manner to other flying cadets according to their educational qualifications.

Graduates of accredited colleges and universities who have received a degree in engineering will receive first priority. Second priority will go to graduates of accredited colleges and universities who have had mathematics to include plane geometry, algebra, and trigonometry. Third priority will go to those who have satisfactorily completed at least two years of college work in accredited universities or colleges and who have had the mathematics outlined for the second priority group.

Twelve-week Training Period

The first class was to graduate on November 2, when a second class of the same size was to be enrolled. A third class of fifty was to enroll six weeks later for a similar training period of twelve weeks, and thereafter new classes were to start every six weeks, each succeeding class to consist of 100 students.

All applications for appointment as flight navigation cadets are being handled directly by the Chief of the Air Corps, Munitions Building, Washington, D. C.

FORD SEARCHES FOR WRECKAGE

Many a layman's concept—dating from and "dated" by the heroic pioneering stunt flights of the late 1920's—of transoceanic clipper flying is that of a desperate dash from pillar to post, from the safety of one shoreline to the other.

Nothing so jars this popular misconception of modern ocean air transport as appeals for outside assistance made upon modern clippers while underway — requests to deviate from course—to report upon the eruption of a Caribbean volcano, to aid in the search for a derelict Pacific freighter, to report on the meanderings of a wayward Bering Sea iceberg.

Radio Call from Lisbon

To the Yankee Clipper, Captain Robert Ford commanding, on one of its routine transatlantic flights there, came such a call by radio from the Portuguese government station at Lisbon. About four hours and approximately 800 miles out of Lisbon, bound for Horta, the Clipper was requested to proceed to Lat. 37.44 degrees N., Long. 25.56 degrees W., "search there for survivors of a ship torpedoed yesterday."

Acknowledging receipt of the radioed request, Captain Ford promptly turned his air liner off course, proceeded to the designated area. From 10,000 feet, with weather conditions CAVU (ceiling and visibility unlimited), from the flight bridge of the Clipper an oil slick ½ mile wide, 5 miles long was sighted. No survivors, no signs of a wreck were revealed after a two-hour search, after which Captain Ford put the Clipper back on its course, and flew on to Horta, where he arrived 60 minutes behind schedule.

—Courtesy PAA's New Horizons

I Give You The Latest Dope

By W. W. OWEN
Council No. 7, EAL
Atlanta, Ga.

It just ain't no use trying to get out of this job. I'm stuck with it despite everything I can do. So, the only way I can figure out of it is to make my stuff so lousy that this council decides that it is stuck with me, and fires me. So, with both eyes closed, and a cigarette drooping out of my steak hatch, I give you the latest dope.

Pilot Cupid and Copilot Stork Bust 85-Hour Law

Dan Cupid (Stupid Cupid, I calls him), and his side-kick, Sammy Stork, have been busting the eighty-five hour law all to pieces working overtime to set the stage for blessed events and then starting the production. Contemplated weddings are common talk with several of the copilots, and Herman (Hoiman de Joiman) Wilhelmi, and Leaky Leake, have muttered a faint "I do" and now know that all that billing and cooing stuff is mostly the former. In addition, the Sully Sullivans and Andy McDonoughs have already put to use the "little things" that the ladies were knitting not long ago. Several other pilots are saving money and walking around with a look on their faces which foretells flower girls and weeping mamas. I wonder if it is the draft, or just the cold weather.

Super Supers—Firecrackers—Screaming Jeeps—Growling Goons—Thunderbirds—Howling Hannahs

All the pilots around here have been having a time finding an appropriate name for the new Douglases powered with the G-202-A's. Due to the performance and noise made when these ships take off, it is thought that there should be some name distinguishing them from our older and more sedate equipment. Any number of new names are being used. Among them are: Super Supers, Firecrackers, Screaming Jeeps, Growling Goons, Thunderbirds, Howling Hannahs, and many others.

Mutual Good Will Result

According to reports filtering from the front line of our contract hearings and from Miami, considerable progress has been made with Mr. Shannon by our conferees. Two series of conferences have been held and another is scheduled at an early date. We expect to be

(Continued on Page 7, Col. 2)

—International News Photo

ARMADA **When Holland fell before the Nazi invaders, her rich East Indian colonies, in a sense, became stronger, because Dutch warships sailed around the world to get to Sourabaja naval base in Java. The Dutch colonists do not fear the German troops, but when it comes to the fear of Japanese invasion, they are constantly on the alert. The fleet is shown protecting the island empire of Queen Wilhelmina. Overhead fly the planes of the island air force. They are called the Flying Dutchmen. The position of the island is said to have been strengthened by the surprise move by Australian troops in moving into Singapore with tanks and planes in a grim determination to protect the Malay Peninsula.**

Long-Standing Merger Culminated

The Civil Aeronautics Board recently approved the purchase by TWA of Marquette Airlines contingent upon the outcome of another case involving the question of citizenship of Marquette. If a majority of the stockholders of Marquette are found to be non-citizens of the United States, the certificate of convenience and necessity held by Marquette would be void, and hence they would have no franchise to transfer to TWA.

The purchase price involved in this deal amounts to $313,333.00, which will be held in escrow pending the outcome of the citizenship question.

Former Decision Opposed Merger

In a former decision the CAB ruled that the contract between Marquette and TWA should not be approved on the ground that the consideration involved was based on the value of Marquette's certificate issued by the Authority and bore no relation to the asset value of the company. This being the case, the Board said it was against public policy to allow a certificate of convenience and necessity to be treated as if it were a speculative security to be sold by the holder to the highest bidder, or as if it were possessed of a value of its own distinct from the legitimate expenses of initially securing a certificate and from the values developed by the conduct of operations under the certificate.

TWA Demonstrates Efficient Operation

Subsequent to this decision and pending a rehearing which had been requested by the parties in interest, the CAB permitted TWA to operate the Marquette service through a lease agreement. During the period from August 15 to October 31, 1940, TWA operated 1,085,726 revenue passenger miles, carrying 4,471 passengers, yielding a total passenger revenue of $53,649. On the other hand, during the period from January 1, 1940, to August 14, 1940, Marquette operated only 185,921 revenue passenger miles over the route, carrying 798 passengers, yielding a total revenue of $10,006. In view of this demonstration of efficient operation, plus the fact that the purchase price had been scaled down in the amount of $160,000, the Board, after the rehearing, reversed its former decision and approved the acquisition subject to the condition mentioned above.

Warner Dissents

This decision, however, was not unanimous. Chairman Branch and Member Ryan of the Board concurred in the new decision for the reasons just stated. New member Baker concurred in the result for two reasons, (1) it is in the public interest to have this route operated by TWA and, (2) the amount to be paid by TWA is not so great as to be beyond the range of managerial discretion. In support of his second reason, Baker further stated that unless it appears that the amount to be paid a carrier for a franchise will clearly weaken its financial strength to such an extent that adequacy of service will be jeopardized, it is in the public interest to have the amount of such payment a matter of managemental judgment. Incidentally, Mr. Baker was not a member of the Board when the first decision was rendered. Edward Warner dissented, standing on the first de-

(Continued on Page 7, Col. 1)

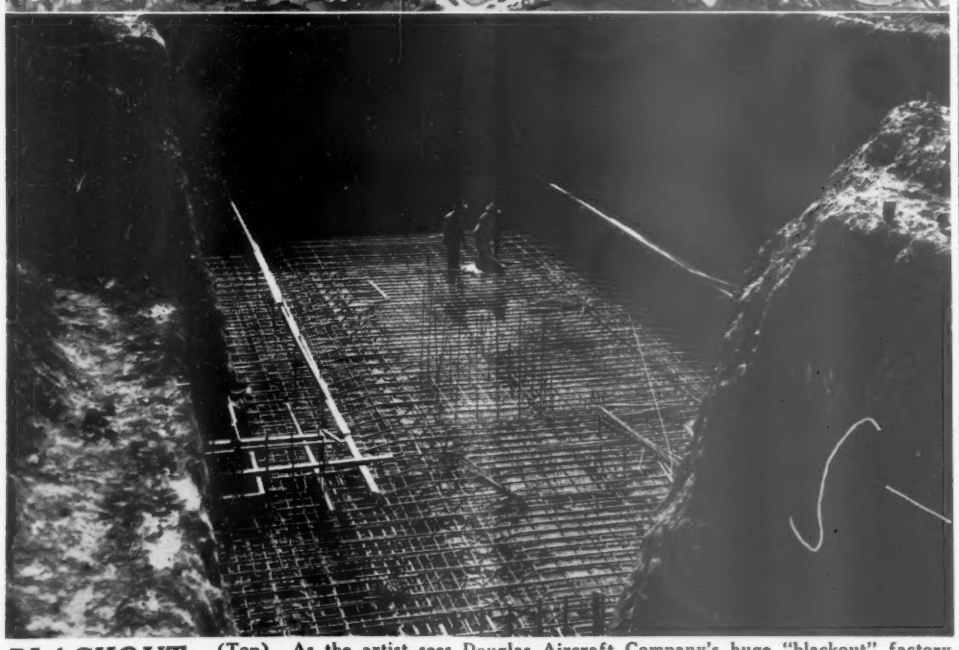
A Blessing In Disguise

(Continued from Page 2)

ship performance that the air lines will like. In fact, having the delivery date of the DC-4's delayed might be a blessing in disguise. There were many rapid advancements made in airplane and engine designs during the last war and there will be an even greater number made during this one. If we had the DC-4's now we might find that they would be completely outmodeled by the end of the war. A later edition of any ship, including the DC-4, should incorporate the new designs that the taxpayers are developing now.

Line Overflowing with NRSA's on Way to West Coast

In the past few weeks, we have been able to renew all our old acquaintances here in Ft. Worth by nothing more than a visit to the airport every now and then. With all the vacations that have been given, the line has been overflowing with NRSA's on their way to the West Coast. Practically every one of them is asked very politely to stay an extra day or two at Ft. Worth. Even though most of you don't like to be deplaned, we're glad it happens that way. We'd like to see all of you more often. Next time bring a ham and stay a month.



BLACKOUT **(Top) As the artist sees Douglas Aircraft Company's huge "blackout" factory, under construction at Long Beach, California, a vital part of the national defense program, which is scheduled for full operation by midsummer. Large crews now are rushing construction night and day, and by midsummer powerful bombers and transports will be rolling off production lines in record numbers for the United States Army and Navy. (Bottom) "Out of sight, out of harm" is a proper caption for this picture. From transformers far beneath the ground will come the electric power for Douglas Aircraft Company's huge new "blackout" factory. Shown in photograph is one of the underground vaults, whose steel and concrete walls will doubly safeguard the plant's power supply. Similar vaults will protect other essential supplies and materials.**

ALTITUDE AND THE AIRMAN

Tenth installment of the article, "Altitude and the Airman," written by Dr. Ross A. McFarland, and abstracted by Dr. Ralph Greene. Succeeding installments will appear in following issues.

XII. THE EFFECTS OF HIGH ALTITUDE ON THE AVERAGE UNACCLIMATIZED AIR LINE PASSENGER.

During 1937-1938, an extensive investigation was carried out for the Bureau of Air Commerce in order to determine the effects of high altitude on the average passenger of a commercial air transport plane. The study involved the analysis of the response of over 200 subjects, varying in physical fitness and in age (from 18 to 72 years), at different rates of ascent and lengths of exposure to 10,000, 12,000, 14,000, 16,000, 18,000, and 21,000 feet. The tests included continuous records of pulse and blood pressure, alveolar oxygen and carbon dioxide, and a series of psychological tests involving muscular, sensory, and mental functions. Because of the prohibitive expense involved in testing so many passengers aloft, the initial experiments were made in the low oxygen chamber at Columbia University. The results were then checked on regular scheduled transcontinental flights of United Air Lines and on transpacific flights of Pan American Airways.

Effect of Altitude on Well-Being of Passengers

During the first part of the research program, an attempt was made to determine the altitudes where the physiological effects are extensive enough to impair the average passenger's psychological reactions and feeling of well-being, as well as the altitudes which appear to be definitely dangerous. In addition, a study was made of the importance of rate of ascent. For example, if a passenger becomes very uncomfortable during a rapid ascent to 12,000 feet in 15 minutes, will he be able to remain mentally alert and comfortable, if that altitude is attained during 1 hour and 15 minutes; also, are 2 or 3 hours at 12,000 to 14,000 feet dangerous to the average passenger's general physical well-being after that altitude has been once attained? With specific answers to the above questions, the airman could often operate his airplane more advantageously for the comfort and health of his passengers.

Problem of Age

The second part of the investigation was concerned with the problem of age in relation to ability to tolerate altitude. There were three groups of subjects divided into the following age classifications: 18-30 years, 30-45 years, and 45-72. The tests were given following a rapid ascent to a simulated altitude of 14,000 feet in the low oxygen chamber.

Physical Fitness

The third aspect of the study was concerned with physical fitness and ability to tolerate high altitude. A group of college students in good physical condition were compared with those in poor health but without definite organic illness. In addition, 30 control or "normal" subjects and 35 psychoneurotic patients without organic illness but with objective signs of "chronic exhaustion and fatigue" were tested twice, once under control conditions in air, and once following a rapid ascent to a simulated altitude of 18,000 feet.

Prolonged Exposures Tested

Finally, a number of experiments were carried out in the low oxygen room at the Harvard Fatigue Laboratory, Boston, and in the low pressure chamber at Wright Field, Dayton, Ohio, in order to test the effects of more prolonged exposures to simulated altitudes of 14,000 and 17,000 feet over a 6-hour period with a normal amount of carbon dioxide (0.04) and with the addition of 3 per cent carbon dioxide in the inspired air.

Experimental Procedures

In the major experiment, a large number of subjects were studied at 6 different altitudes from 10,000 to 21,000 feet at 2 rates of ascent—rapid (15 to 30 minutes) and slow (45 minutes to 1 hour and 30 minutes). The rapid ascents averaged between 600 and 700 feet per minute, and the slow ascents less than one-half as fast. Once the simulated altitude was reached, the various tests were given twice during the two hours at the altitudes indicated. The length of each experiment varied from 3½ to 4½ hours, depending on the rate of ascent. Over 250 experiments were carried out in the main part of the study. For the most part, the subjects were tested in the chamber individually. Two experimenters inside the chamber gave the tests and one outside the chamber made frequent analyses of the percentages of oxygen and carbon dioxide in the chamber.

Tests Given in Regulated Oxygen Chamber

The tests were given in an oxygen chamber where the gases, temperature, ventilation, and humidity could be regulated. The concentration of oxygen was maintained at the desired percentage by running in nitrogen. The carbon dioxide never exceeded 0.7 per cent. The ventilation was provided by a motor blower unit. The air current was passed through a tank which contained ice to cool and dry the air. The temperature was maintained between 68° and 74° F., and the humidity between 40 and 50 per cent.

Subjects Ranged in Age From 17 to 72 Years

The subjects who served in the experiments were of the same socio-economic status as the average flying population. In the main experiment many of the younger subjects were undergraduate and graduate students in Columbia University. Those who were more advanced in age were, for the most part, professional men in New York City engaged in the practice of law, teaching, or business. The total age range was from 17 to 72 years. The subjects varied in physical fitness from college athletes to those who led sedentary lives with a very limited amount of exercise. There was also a fair-average distribution as to height and weight. Those with known organic illnesses were eliminated from the experiments. As a result of the tests, however, a number of the individuals were shown to be in poor health, and were placed under medical supervision. One of the subjects, for example, collapsed at 9,000 feet after approximately 10 minutes during the ascent.

Physiological and Psychological Tests

The physiological tests included continuous pulse rate, systolic and diastolic blood pressure at 5-minute intervals, and analyses of the partial pressure of oxygen and carbon dioxide in the alveolar air. The series of psychological tests included: (a) handwriting; (b) ocular muscle balance; (c) choice reaction times; (d) color tests; (e) code or attention test; (f) memory; and (g) records of the complaints associated with the lack of oxygen. In certain of the experiments, samples of blood were taken for analyses of the blood gases and certain other biochemical tests. The details of this phase of study may be obtained in the original report.

Results of the Experiments on Large Groups of Subjects

There appears to be a close relationship between increase in pulse rate and height attained, 10,000 to 18,000 feet. A well-controlled rise in pulse rate is apparently a favorable response to lowered oxygen pressure in the average person in good health. Many of the subjects in poor physical condition responded with extreme variations in pulse rate, i. e., either an unusually large increase in rate, a sudden decrease in rate, or no change at all. There is a general tendency for the pulse

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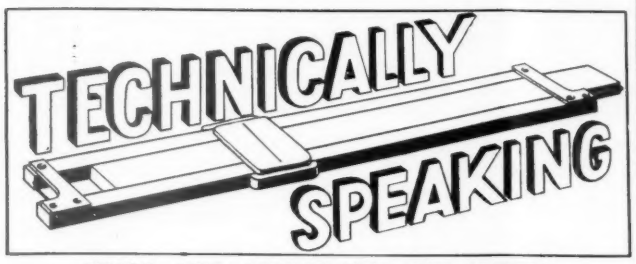


STALL AND ASSOCIATED AIR SPEEDS

By JOHN L. MAGDEN, TWA pilot, and member of the Air Line Pilots Association Engineering and Airworthiness Advisory Committee

There is evidence of considerable misunderstanding among various persons as to the meaning of stall as related to indicated air speed. There are those of us who believe that an airplane will stall at the same indicated air speed regardless of its attitude. Recently, several pilots have expressed concern about stalling characteristics with special reference to airplanes attempting to fall off while in a turn or while landing at indicated air speeds far in excess of the value that is quite often thought of as the stall. This misunderstanding of stall can be very dangerous, consequently I have been asked to prepare the following explanation with the hope that it might be a step toward a better understanding of stall.

JOHN L. MAGDEN

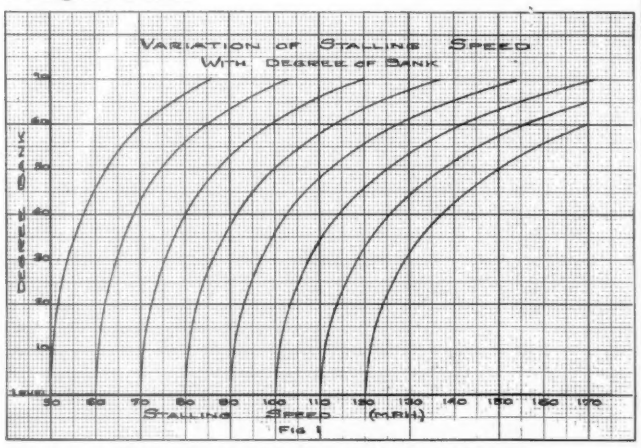
A 30% to 50% reduction in lift.

Angle of Attack, Not Air Speed, Determines Stall

First, I would like to state that it is angle of attack, and not air speed, that determines the stall of an airplane. It is possible to stall an airplane at any indicated air speed providing it is possible to maneuver the airplane into a stalling attitude at the air speed. The snap roll, so common to those of you who have flown pursuit aircraft, is a good example of stall at high indicated air speed. The snap roll is nothing more than a horizontal spin, caused by the stalling of the airfoil. Yet it can be executed at 140 m.p.h. or 150 m.p.h. by airplanes with landing speeds around 60 m.p.h.

Stalling Speed Variations

The reason for this is clear when we consider the load supported by the wings in accelerated flight is not the weight but the vector resultant of the weight and the reacting inertia force due to the acceleration. For unaccelerated horizontal flight, the accelerating force is zero, and the load on the wings is the gross weight of the airplane. Hence the stalling speed varies as the square root of the gross weight. However, during maneuvers the accelerating force is not zero and the load on the wings is the vector sum of the gross weight and the inertia forces. The stalling speed in this case varies as the square root of the resultant force on the wings. If we know the acceleration, or can compute its value, then the stalling speed can be determined. For example: In a 2G pull-out, the stalling speed has increased by the square root of 2, or by a factor 1.4142. Also, for a 60° bank the load on the wings is 2G since this is the force necessary to prevent slipping or skidding. This means that if an airplane stalled at 85 m.p.h. in level flight it would stall at 85 x 1.4142 = 120 m.p.h. in a 60° bank. Since the accelerating force for any degree bank is easily computed, the following graph has been prepared to show the variation of stall for various degrees of bank.



Extra Margin of Indicated Air Speed Needed

With stalling characteristics no better than those of our present equipment, ten to twenty m.p.h. should be added to those values shown in the graph to insure a safe bank. For example: If an airplane stalls at 85 m.p.h. in level flight, it will require an indicated air speed of between 130 to 140 m.p.h. to execute a 60° bank safely. This points out the need for a good margin of indicated air speed above the landing speed for manuevering around the airport at low altitude, especially during low visibility; because with the increase in local traffic around airports the probability of having to make a 60° bank to avoid a mid-air collision increases. The need for this extra margin of indicated air speed becomes even more apparent when we realize that such a maneuver would probably be executed involuntarily, or on impulse without due consideration of the indicated air speed.

Airplane Icing and Its Effect Upon Stalling Speed and Stalling Characteristics

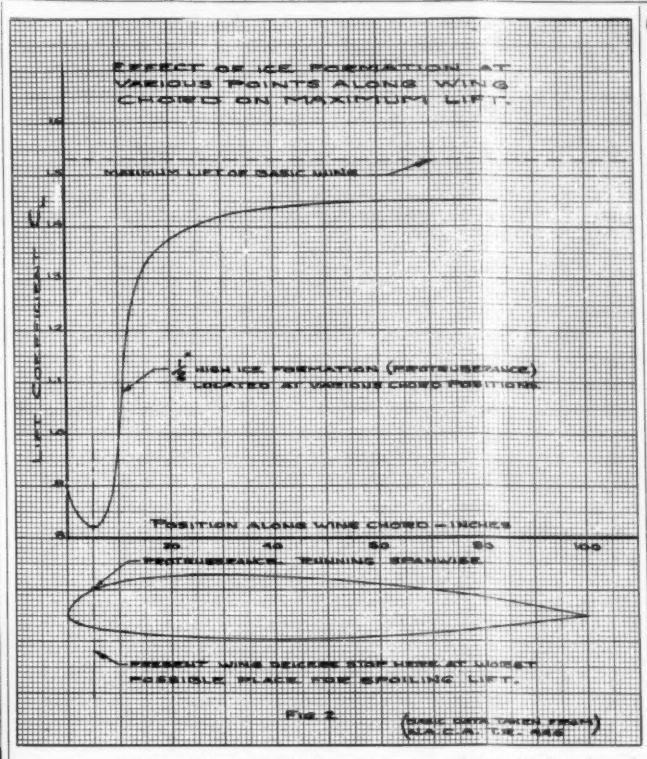
There are so many types of ice, and so little known about the effect it has upon airplane performance, that little can be said here about the problem in its entirety. However, a few known facts may be stated with the hope that it may give a pilot a better idea of what may be expected from the presence of ice.

Wind-Tunnel Tests

From wind-tunnel tests under assimilated icing conditions, it has been shown possible to have a 30% to 50% reduction in lift, and a 50% increase in drag due to moderate-to-heavy ice formation. A very interesting wind-tunnel experiment resulted from investigating the effect of ice formation at various points along wing chord on maximum lift. (Reference N.A.C.A. Technical Report 446.) By placing a spanwise protuberance at various points along the chord of an airfoil and measuring the maximum lift at each position, the following curve was obtained. (See Fig. 2 at top of page.)

Findings of Experiment

From this experiment, it is seen that the most sensitive part of the airfoil to ice formation is the 5% chord position. In this position, one-half inch of ice on an airfoil with 100" chord will reduce the maximum lift to 54% of its value with no ice. It is interesting to note that our present deicers stop at this most critical point, or the worst possible


EFFECT OF ICE FORMATION AT VARIOUS POINTS ALONG WING CHORD ON MAXIMUM LIFT.
VARIOUS LIFT OF BASIC WING
HIGH ICE FORMATION (PROTUBERANCE) LOCATED AT VARIOUS CHORD POSITIONS
POSITION ALONG WING CHORD - INCHES
PROTUBERANCE, RUNNING SPANWISE
PRESENT WING DEICERS STOP HERE AT HIGHEST POSSIBLE PLACE FOR SPOILING LIFT.
FIG 2
(BASIC DATA TAKEN FROM N.A.C.A. T.R. 446)

place for spoiling lift. Therefore, when any substantial ice deposit builds up behind the deicer, or on the cap strip which holds the deicer in place, we immediately obtain the maximum spoiling effect which it is possible to obtain with that amount of ice.

Deicer Operation

Consequently, for certain types of ice formation, such as smooth or relatively smooth ice which extends back over the cap strip as well as over the nose of the boot, it would be safer not to operate the deicers at all since to operate them would remove only the ice on the deicing boot leaving a shoulder of ice along the cap strip to act as a spoiler at the most sensitive position on the airfoil. Deicers may be used to the greatest advantage if left in the off position until ice is formed, thereby giving opportunity to observe ice formation and a chance to decide on the use of the deicers. Even in heavy ice, deicers are most effective when used intermittently. There have been cases of ice forming completely over the deicers while the deicers were operating, thus nullifying the use of the deicers and exaggerating the amount of ice. In these cases, if the deicers had been used intermittently, the ice could have been removed from the deicing boot satisfactorily.

Ice Presents Greatest Danger in Change of Airfoil Characteristics

Any reduction in lift due to ice formation results in an increase in stalling speed. Reducing the lift to one half will increase the stalling speed by the same amount as doubling the weight of the airplane. However, the two airplanes differ extremely in stalling characteristics. In the one case, the airfoil characteristics remain the same as that of the normal gross weight airplane whereas in the case of lift reduction due to ice formation, the airfoil characteristics are changed. It is in this change in airfoil characteristics that ice presents its greatest danger. Any reduction in lift due to ice is associated with a reduction in stalling angle. If the formation of ice has reduced the lift to one half, the wing will stall at an angle of attack around 8° or 9°, instead of the usual 13°. At this reduced angle, there is no buffeting; consequently, no stall warning. A pilot is normally expecting a stall warning both in angle of attack, and tail buffeting. Without these, and at the same time not knowing at what indicated air speed the stall will occur, the pilot has no means for knowing when the airplane is approaching the stall. Consequently, an inadvertent stall becomes more likely. At the same time, recovery from this inadvertent stall becomes less likely, due to the effect the ice may have on the wing-tip stalling characteristics.

Wing-Tip Stalling Effect

The stalling effect of ice on an airfoil is a function of the relative size of the ice to the chord of the airfoil; assuming the geometric shape and position of the ice relative to the airfoil to be the same. For example: A ¼" of ice on a 50" chord position would destroy the lift on that portion of the wing by the same per cent as the same relative location of a ½" of ice at the 100" chord position. Since the depth of ice formation is the same throughout the span, the relative size of the ice to wing chord, and consequently its spoiling effect will increase toward the tip on tapered wings. The wing-tip stalling effect that ¼" of ice in the 5% chord position would have on a Douglas DC-3 is shown in Fig. 3 below. In this example the wing was assumed to

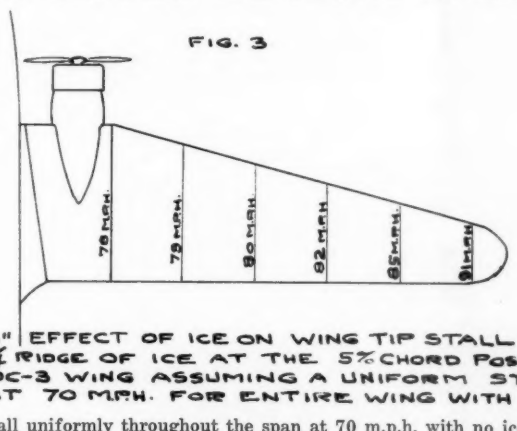


FIG. 3
70 M.P.H.
79 M.P.H.
80 M.P.H.
82 M.P.H.
85 M.P.H.
91 M.P.H.
¼" EFFECT OF ICE ON WING TIP STALL.
RIDGE OF ICE AT THE 5% CHORD POSITION
DC-3 WING ASSUMING A UNIFORM STALL
AT 70 M.P.H. FOR ENTIRE WING WITH NO ICE

stall uniformly throughout the span at 70 m.p.h. with no ice. For an airplane with the same wing taper as the DC-3, but one that stalled at 85 m.p.h. with no ice, the values in the above figure would vary from 94 m.p.h. at the root section to 110 m.p.h. at the tip.

Combined Effect of Accelerated Flight and Ice

In order to obtain the combined effect of accelerated flight and ice it might be interesting to note the values in Fig. 3 for a 60° bank. In the case of the DC-3 with a stalling speed of 70 m.p.h. in level flight with no ice, the stalling speeds would be 110 m.p.h. at the root section and 130 m.p.h. at the tip for a 60° bank and ¼" ice. For the airplane that stalls at 85 m.p.h. in level flight with no ice the values would be 134 m.p.h. at the root and 156 m.p.h. at the tip. These are the values of the stalling speed. To execute the bank safely, an additional 20 miles should be added. When we consider that the drag has been increased considerably by the same ice that has destroyed the lift, we see how impractical it would be to attempt safely, anything but a shallow bank.

Good Margin of Indicated Air Speed and Shallow Banks Best Safeguard

Since under actual conditions one can never be sure of the effect a load of ice may have on the stalling speed, and stalling characteristics, a good margin of indicated air speed at all times and shallow banks seem to be the best guard against stalling due to ice.

The South American Way

(Continued from Page 3)

Pogo sticks for the landing gear?

Commendations for Pilot Magden

A few months ago we suggested to President Behncke that a discussion of take-off on inclined fields with varying forces of head winds and tail winds would be welcomed in the Technically Speaking column. As though in answer to a maiden's prayer, said article came in the June issue of the *AIR LINE PILOT*. Thanks to the editor for selecting the article, and commendations to Pilot John Magden for the fine presentation and solution of the problem. We have found it useful.

Do You Know—

That Buenos Aires has modern subways with tiled stations, and tile murals depicting Argentina's history, culture, and commerce?

That Argentina has an extensive railway system and has been using streamlined Diesel trains for several years?

That the people of Buenos Aires look very much like the people of any large American city?

That Rio is almost on the Tropic of Capricorn?

That the southern tip of Africa is about the same latitude?

That Rio has the kind of climate which the Chamber of Commerce of a certain California city likes to talk about?

Rub It In, Rub It In

Right now, we can't think of anything but the beach, so you take the newsletter and we'll take a swim.

A PILOT MEETS AN ENGINEER- NEITHER GAINS

Once upon a time there was a pilot of a big air liner who had never ridden on a train, and the engineer of a streamlined train who had never ridden on an airplane.

The two met one morning in the Union Station at Chicago.

Said the air liner pilot, who is Sterling S. Smelzer, of the Pennsylvania - Central Airlines: "How fast will this thing go?"

To which the Engineer, Alonzo A. Grandy, replied: "We'll be 90 miles from here in 70 minutes."

"That," said the pilot, "is rather slow. We can do the same distance in a half-hour."

"But I wouldn't care for an airplane because of the noise and the height," said the engineer.

"That is strange," the pilot replied. "I never heard so much noise in my life as this engine makes."

"Is that why you've never been on a train before?" inquired Engineer Grandy.

"I've just never gotten around to riding a train and that's the truth," said the pilot. "Why have you never ridden in an airplane?"

"I'm too busy riding trains," returned the engineer.

The engineer said he would stick to the railroad because, he pointed out, you don't have to steer a train, it follows a track.

"And an airplane follows a beam," was the parting argument of the pilot.

The moral, as Aesop pointed out many years ago, is: "Every man tries to convince himself that the thing he cannot have is no good."

—Reprinted through courtesy of the CHICAGO DAILY NEWS

Convention Talks by Gen. Connolly and E. P. Warner Prove Educational

Gen. Donald H. Connolly, Administrator of the Civil Aeronautics Administration, and Edward P. Warner, Sc. D., Vice-Chairman of the Civil Aeronautics Board, were guest speakers at the 1940 convention of the Air Line Pilots Association. Due to the frank, timely, and educational nature of these addresses, the AIR LINE PILOT is publishing the complete texts in serial form. The second installments follow:

Warner Said:

"There is one other thing that I would like to say about accident investigation. In the report on the Lovettsville accident, we included several recommendations. Some of them were a recognition of the inadequate state of scientific knowledge on certain matters such as the behavior of lightning with respect to aircraft, and an appeal for further research in those fields.

Full Pooling of Experience Is Valuable

"There was one recommendation, however, which especially concerns you. It was that better means should be found of securing, and making available for study, the records of all the unusual experiences that pilots encounter that might be useful to other pilots. As you know, arrangements have long been in force, through the National Advisory Committee for Aeronautics, for the filing by air line pilots of detailed reports on the circumstances existing at the time of any lightning discharge involving the airplane, and upon the conditions under which exceptionally heavy structural loads are encountered on aircraft carrying continuously-recording accelerometers. It would be of advantage to go much further than that, and formal organization alone is not sufficient in that respect. Every organization that is operating aircraft, and every individual who is engaged in that operation, must take a personal interest in this matter if we are going to get the full value of a full pooling of experience. During the Lovettsville investigation, and since the report was finished, we have had a number of reports of immense interest on personal experiences with exceptional atmospheric turbulence. Some of them came to us in very complete form, by the very helpful initiative of the pilots concerned or of officials of the organizations with which they were connected. Others came first as rumors, and only after a substantial amount of inquiry on our own part did we discover whether or not they really represented anything that was of real use to us.

Pilots' Information Held Important

"Anything that you can do to increase the chances that that kind of information will be made available where it can be used in drawing general conclusions before accidents happen, rather than after some accident has suggested that the information might be of interest, will be a real public service, and a service to your own profession and the industry with which you are associated.

"When I say that, you will no doubt ask, with good reason, why I left it in that vague form and why I don't suggest specific channels and procedures. The best answer I can give to that at the moment (although that is a question that will be a subject of further discussion and study in Washington) is that the Civil Aeronautics Administration, the Board and its Safety Bureau, the National Advisory Committee, and the Weather Bureau are all interested in this, and any information that gets to any of these places is likely to become usable by all of us.

Experiences of Pilots With Lightning Discharge

"I have a couple of specific examples that I pulled out of the file. In fact, I didn't have to pull them out. They had come in as the indirect result of the Lovettsville inquiry. One is a letter from a well-known electrical engineer who has concerned himself especially with problems of lightning discharge on aircraft. He said he had talked recently with two air line captains, one of whom explained that he has experienced rough engine operation when flying through storm, with occasional temporary failure of both engines. He pointed out that his own experience, coupled with like experiences of other pilots, indicates that this failure of the engine occurs only in heavily discharged clouds and when rain is actually falling. He has not encountered it when rain was encountered alone without static, nor was it observed in cases where the static occurred without rain.

Becomes a Part of Research Agenda

"That was new to this engineer and new to me, and it becomes immediately a part of the agenda of the Committee which is working on research on atmospherical electricity in relation to aircraft. That is something we like to know now, and not two years hence, and in as much detail as possible, and so far as possible we would like to have multiple and collective reports, so that we can know whether these experiences are isolated and individual, or common and generally recognized.

"We hope that when they come to be generally recognized they will come within the scope of our knowledge. But there is always a first time, and that is the time when we like to get the news.

Temporary Blinding and Deafening By Lightning Reported

"Here is another similar letter from one of our own people in the field on experiences, reported to him, with the temporary blinding and deafening of pilots by lightning.

"This is a case in point, where the more information that those who are working with regulations, with administration, and with the planning of research, can secure, the better off we all are.

Problem of Regulation

"The next particular problem is that of regulation, and perhaps the way in which the agencies of government are related to one another is a little more confusing there than elsewhere. It will not be confusing, however, if it is viewed in terms of the normal structure of government in the United States. With respect to this particular problem, the Board is the legislative branch and the Administration is the executive. The regulations and any amendments that are made in them acquire their force through the action of the Board; but they are applied by the Administration.

"I interrupt here for a moment to say that Colonel Connolly and I discussed this matter some months ago; and as a result I wrote to Mr. Behncke to suggest that the recommendations that you send on various matters should be divided to the extent of sending recommendations dealing with proposed regulations directly to the Board, and to the Administration, all those matters concerned with the airways or with the administration of the regulations, or with inspection practice, or anything of that order. But as we are working in very close daily association, it would be very helpful if we could receive copies of the mail sent to one another.

Origin of Amendments and New Regulations

"Proposals for amendments or for new regulations may come from anywhere. Some of them originate with members of the Board or with its staff; some are sent in by your own officers, or by other interested organizations or individuals; a major proportion naturally comes from the Administration, which is in daily contact with whatever problems the regulations create. In exactly the same way, suggestions for legislation may come to Congress from any source, but they come very commonly from the executive agencies that find a need for a new law or an amendment to an existing law in connection with their work. Wherever the initial suggestion originates, however, the process of bringing these regulations to their final form is one of constant interchange of view between the Board and the Administration, and of frequent solicitation of the views of the interested public or of the groups most particularly concerned with the particular matter under consideration.

"The regulations raise many questions—far too many to be discussed here—but there is one very broad question upon which I want to dwell for a moment. It concerns the degree of flexibility for which the regulations should provide.

Flexibility of Regulations

"That question is not limited to the Civil Air Regulations. It arises everywhere in the legislative process. There is a great deal of complaint (not so much from your particular group, although I hear it occasionally from air line pilots; and much more frequently from others engaged in other aeronautical activities) that the regulations are too complex and too elaborate. When I studied the group with reference to the possibility of simplification, the question of whether or not, how, and how far the regulations can be simplified, seems to resolve itself very largely to this alternative question which concerns the degrees of flexibility for which the regulations should provide. That question is not limited to the Civil Air Regulations. It arises everywhere in the legislative process. It is general legal principle, as I understand it, that a legislative body may not delegate its powers without indicating how and for what purpose and within what limits those powers are to be used. It may not delegate power without setting up some standards, and the principle of setting up standards is as good in the process of making safety regulations for aeronautics as anywhere else. Unless the regulation incorporated standards, those affected by it would be wholly unable to determine from its text what the effect would be, and they would be helpless until they had received an individual interpretation or drawn their own conclusions from the application that they had seen made in some other case.

Exact Details Would Cause Complexity—Seek Middle Ground

"If, on the other hand, the attempt to provide standards was carried to the length of trying to set forth in detail exactly what acts the regulations permit and exactly what they prohibit, with no room left for flexibility or discretion, the process of regulation would become such a maze of complexity that a battalion of criminal lawyers would be required to cope with them.

"It is impossible to foresee everything that can go wrong and describe it in detail. That is tried to an extent from time to time in certain branches of law, and it has habitually led to situations which, when presented in skeleton form, so to speak, without their background, appear to the layman as inherently and intrinsically ridiculous.

"We have to seek the middle ground, and by way of illustrating the problem, I cite a few regulations in connection with which it is possible that more flexibility would be beneficial to all concerned. I am listing these examples in the hope that you will think about them individually and as a group, and give us the benefit of your thought.

Air Traffic Regulation Shown as Example

"I take first the case presented by a considerable body of existing air traffic regulations. It is now provided that no two airplanes shall approach one another within 500 feet; that there shall be no flight at less than 300 feet altitude over the water, or 500 feet over the land, except for taking off or landing, or 1,000 feet over any congested area; and there are other similar provisions. I do not suppose that any member of your organization ever has to give a thought to any of those rules. Your standards in such matters are not set by a bare minimum embodied in governmental regulation, but by your own convictions and those of the organizations to which you belong on the matter of what is required for a proper margin of safety under the particular conditions under which you are operating. Manifestly, the requirement of a proper margin of safety varies with circumstances. It is safer to fly at an altitude of 100 feet with certain aircraft and over certain areas than at ten times that altitude with other machines or over a terrain more unfavorable for landing. Whether the least degree of separation of aircraft from one another that can be considered safe is 500 feet, or 200 feet, or 2,000 feet depends upon what the aircraft are, what they are doing, the relative courses on which they are traveling, and the degree of assurance that the pilots are aware of one another's presence and intentions. All detailed provisions on such points might perhaps be replaced, with the advantage of increased flexibility to adapt the requirement to actual conditions, by a provision that:

> " 'No pilot shall at any time so conduct himself, or maintain such altitudes, attitudes, and courses, as to create any hazard of collision with other aircraft as with any other object, to require any sudden maneuvers on the part of any other aircraft, or to endanger persons or property on the ground, taking into account at all times the possibility of mechanical failure.' "

Connolly Said:

"We have made some changes in the Civil Aeronautics Administration since your last meeting. The major one, the breaking down of the Civil Aeronautics Authority into two units, the Board and the Administration, was mentioned by Mr. Warner. We have done a few things, but they have been mostly along two lines: One is trying to get responsibility fixed and letting the authority go with the responsibility, because they are inseparable; and the other is to get more decentralization, to get the authority more out into the field. I think that has a bearing on your relations with the Civil Aeronautics Administration, to get more authority out there. With this arrangement you can get a lot of your problems solved with the local man.

"For instance, there are many of these problems which are purely local which you ought to be able to take to the Regional Manager here, and that will save your time and our time.

"It Helps to Have an Association"

"With respect to the other recommendations that this Association makes from time to time, we do the best we can on them. In some cases we have gotten something done; and other times, we have not. It helps to have an Association. It helps us very much. The airmen are pretty self-reliant and are independent thinkers, and I imagine that is a result of their profession. The pilot's whole experience in life is that if he gets into a fix he has nobody but himself to get him out. This experience makes for a self-reliant man both in action and in thought, with the result that we get a lot out of the individual recommendations that your members make to us in Washington.

Association Recommendations Amount to $150,000,000 Worth of Work

"I have found that, taking the recommendations from one particular airman and asking two or three others what they think of them, one man approves thoroughly, and the next man says, 'My gosh, let's not do that.' But if you have an association and can thrash matters out and get the consensus, it helps us. I think it also would help us a little bit more if you would codify, or from time to time, edit your recommendations to us as to what you would like done. For instance, I asked the man who heads our Airway Engineering where we had gotten on the recommendations made by this Association for new airway aids, and he said, 'Well, we have gotten some done, and some we haven't,' but he told me that the last time he added it all up, the recommendations from the Association amounted to something over $150,000,000 worth of work."

SIGHT-SEEING WHILE LAYING OVER AT THE FAR END OF THE RUN, PAN AMERICAN'S TRANSATLANTIC FLYERS DO A BIT OF SIGHT-SEEING AT ONE OF THE OLD MOOR'S CASTLES NEAR LISBON, PORTUGAL. L. TO R.: PILOT WHITMORE, ENGINEER LAING, PILOTS GOYETTE AND LINDSEY. KNEELING: PILOT NOLAN. BELOW IS A STREETCAR ON WHICH THE BOYS RIDE TO AND FROM THEIR HOTEL. IT HAS SOMEWHAT THE SAME CHARACTERISTICS AS AN AIRPLANE. IT GOES UP AND DOWN AND ALWAYS REMAINS LEVEL. AT LEAST, THAT'S THE GENERAL IDEA. HOW ABOUT THE BRAKES? WE HOPE THEY ALWAYS HOLD.

LATE NEWS

(Continued from Page 1)

gives promise to result in quick success because American magazines are popular in South America and other Latin-American countries. The only handicap is the length of time it takes for delivery unless they are sent via air mail, and obviously this runs the cost up very appreciably.

Encouraging

Col. Edgar S. Gorrell, President of the Air Transport Association, recently struck a cheerful note when he said that the domestic air lines flew 25 per cent more revenue-passenger miles in January 1941 than for January 1940. The Colonel added: "There has been no lack of spare parts and supplies, and only a small percentage of air line personnel has been called for military service."

Chicago

ALPA Headquarters has just received an unofficial report from an authentic source that the actual removal of the troublesome and dangerous railroad-track obstruction which, for such a long time, has bisected the Chicago Municipal Airport, will actually begin May 1, and possibly even sooner. This is certainly good news for the air line pilots who, for a long time, have been literally squeezing their huge planes into the Chicago port when landing from any direction excepting east and west.

Rumor

According to the latest blurb from the well-known rumor mill, the "Little Flower," Fiorello La Guardia, Chief Pilot for the City of New York, will shortly be appointed new head of the nation's aircraft production. This is just in the rumor stage and there is nothing authentic about it except that it is in the same stages as about 99 per cent of the "hot-off-the-griddle" stuff we hear nowadays.

President

Thomas O. Hardin, former chairman of the Air Safety Board of the CAA, and more recently

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TWA-Marquette Deal Approved

(Continued from Page 4)

cision of the Board.

Price Paid Not to Be Considered In Future Cases

The majority, in rendering its decision, went on to say that the price paid by TWA would not be taken into account in any future rate case. In support of this view it cited several Supreme Court cases on appeals from Interstate Commerce Commission decisions in which the court made a distinction between values for rate-making purposes and exchange values. This, perhaps, is fair enough so far as the parallel goes but we are wondering if the Board refers to passenger and express rates or to the air-mail rates which have no counterpart in the interstate commerce laws. The Civil Aeronautics Act is unique in that it directs the Board to fix air-mail rates on a basis that amounts to a subsidy. At any rate, a favorable decision has been handed down and everyone, so far as we know, is happy.

RESTRICTED

A number of areas throughout the country, over which the air line pilots have been flying regularly, have become restricted for military reasons. It is important to National Defense that all the air line pilots carefully refrain from flying over all forbidden military and naval areas.

"I'm Plain Map-Happy"

(Continued from Page 3)

all finished up with it by the time this is printed. Mr. Shannon is reported very co-operative and a feeling of mutual good will exists between both parties.

Just Another Day

Christmas and New Year's have "came and went" and to many of us in Atlanta they were just another day. To hear everyone telling about how he was stuck out in Brownsville, San Antonio, or Chicago during the holidays, you would think that the only people who celebrated were the wives and children. I don't know myself because I happened to be one of those out on both dates. Thus we all start a new year with a whole slew of New Year resolutions which we all enjoyed breaking in January.

In closing, I submit a little poem which I think sums up the condition of us "pore," downtrodden copilots. The author is unknown, but here it is anyway.

UNCIVIL AERONAUTICS

I spend my nights in solitude.
My face is lined with longitude;
I'm double crossed by latitude.
My ground speed's slower than a snail,
I'm number one on Beaufort's scale.

I add or subtract each balmy breeze,
And deviate with the greatest ease.
I drift when I walk, I crab when I talk;
With ruler or compass, I can raise an awful rumpus.
When I cut loose with my protractor,
There's no such thing as safety factor.

At midnight I see my bed beckoning;
At five a. m. I'm still dead reckoning.
For navigation I lack propensity,
I'm at dew-point in terms of density.
My true heading points to a padded cell,
My radius of action is shot to h - - l.
Why, only today, I woke with a bang-le;
I dreamed last night I married an angle.

I thought this course would be a snap-py,
But look at me now, I'm plain map-happy.

Transfer Pilots To Reserve Pool

(Continued from Page 1)

Civil Aeronautics Administration, are submitted to the Adjutant General and the Reserve Officers in question are immediately placed in the War Department Reserve Pool.

Similar procedure for deferments is being followed by the Navy. N.A.A.'s correspondence was initiated by a suggestion from the president of a prominent air line and demonstrates the co-operative manner in which such problems are being worked out.

OPM Chief William Knudsen Makes Clarifying Statement

OPM Chief William Knudsen has stated: "All interested departments of the Government are convinced of the necessity of maintaining the existing quality of air transportation. Of the air line pilots and copilots in the country, many of whom are Military Reservists, less than 3% of the pilots or captains, and less than 8% of the copilots or first officers, have been called for military service and trained replacements have been available for every man transferred from civil to military service."

High Frequency—

(Continued from Page 1)

ity of signal strength in the pilot's headphones. For instance, if the service radius of a given ultra-high frequency station is 50 miles from the transmitter, service over the entire distance will be consistent and uninterrupted. Furthermore, ultra-high frequencies do not "bounce" when they hit the ionosphere and cause long distance night-time interference similar to present frequencies. These frequencies continue straight on away from the earth's surface and are never reflected. In view of this fact, they are not subject to fade-outs nor interference from the transmissions from other stations. Also these frequencies are not subject to "bending" or "splitting" over mountainous terrain.

Availability of More Frequencies

Another attractive feature of ultra-high frequencies for airway use is the availability of a much greater number of frequencies, permitting the installation of as many stations as may be required not only to take care of the existing airways but those which may be established later. A band has been specifically set aside for this purpose by Presidential Executive Order, after studies made by the Independent Radio Advisory Committee.

Static-Free Characteristic

"This static-free characteristic of the ultra-high frequency waves alone is of tremendous importance to the future of aviation," said Gen. Connolly. "Everyone who is familiar with the ordinary radio set knows that static is most prevalent in bad weather, and it is just at that time that the pilot's need for dependable radio guidance is greatest.

Planning Radio Airway Aids

"In planning the federal system of ultra-high frequency radio airway aids, first consideration has been given to those areas in which there is greatest congestion of radio range stations and to those airways on which the greatest difficulty is now being experienced because of range course irregularities due to mountainous terrain. In most cases these two conditions coincide."

Present Band Situation Critical

The need for radio range frequencies in a band, other than the one within which the Federal Airways system and several other Government services now operate, has been recognized for some time. Because of unavoidable congestion, the band has long since reached the limit of its usefulness and the situation has become increasingly critical.

Establishment of New Ranges Along New York-Chicago Airway

The new ranges are being established along the New York-Chicago airway, at the following points:

Easton, Pa.; Sunbury, Pa.; Black Moshannon, Pa.; Millbrook, Pa.; Cleveland, Ohio; Toledo, Ohio; Millersburg, Ind.; and Chicago Heights, Ill.

Routes to Be Equipped by Proposed Appropriation

The proposed radio range stations in the appropriation asked for today are to equip the following routes:

San Diego - Los Angeles - San Francisco - Seattle - Vancouver; Salt Lake City-Portland-Spokane; Kansas City - Chicago; St. Louis - Chicago; Kansas City-St. Louis-Indianapolis; Dayton - Columbus - Pittsburgh - Philadelphia; Chicago-Cincinnati-Washington-New York; Cleveland-Washington; New York-Buffalo; New York-Boston; and Chicago-Detroit.

Final Selection Dependent Upon Result of Survey

Final selection of the points for the radio landing systems will depend upon the result of a survey which will be undertaken immediately to determine whether the desired locations are actually suitable for such installation.

Construction Under Way When Funds Available

Gen. Connolly said that the construction program would get under way as soon as funds were made available by Congress.

THE PESKY SO & SO'S MIGHT L—S'WISE SENT BACK MY CHAWIN' TERBACKER, SAYS PIERMAN

This is the tale of the pilot who lost—not his shirt—but his uniform coat. Captain S. C. Pierman was flying the regular Detroit-Washington run of Pennsylvania-Central Airlines the other day with a new first officer in the cockpit with him. Among other things, Captain Pierman was pointing out to his copilot to be careful about opening his side window because of the possibility of losing his radio headphones—especially when the ship is traveling 190 miles an hour or more. Placidly, Captain Pierman's trip was proceeding towards Washington at 7000 feet. It became a little warm, so Pierman removed his uniform coat. A few minutes later, he opened his window and, without warning, his coat flew out. Someone near Martinsburg today has a pilot's coat, wings, stripes, and all—value, $35.00. Pierman was most disturbed because in the side pocket was his favorite chewing tobacco.

—Thanks to George Mason, PCA

* * *

ONE IN THE EYE WORTH TWO IN THE BUSH

Two old-timers were having a heated discussion about the relative merits of the radio beam signals and the visual beacons along the airways on the ground. Finally, the following remark abruptly ended the argument: "You can argue with me all night, but the fact irrefutably remains that one beacon in the eye is worth two in the ear." Verily, verily, amen!

* * *

YOU WANTED TO BE A FLYER

You called it "one of the coming things,"
To travel around supported by wings.
But in your mind you had to allow—
P'r'aps you'd be better off to jockey a plow.

When you started to fly it got under your skin,
And first thing you knew you were def'nitely in.
It's like stumbling blindly into a hole,
Which you can't crawl out of, to save your soul.

You flew up and down for years and years
'Til the noise of the engines had deafened your ears,
Your wrinkles got deeper from day to day,
And your head grew balder, or streaked with gray.

You just knew that by now there'd be nothing to it;
The job would be easy—any kid could do it!
You're flying along thinking things like that,
When you wake up and find you're on top of the "stack."

Airways clears you to Coney and there you hold.
It's a sad story now, (and you're ready to fold.)
You are told that now you're eighth to land,
And you grimly settle down to the job at hand.

You fly back and forth as blind as a bat,
Through clouds that are dark as the inside of your hat.
The thermometer says thirty-two degrees,
And your windshield already has started to freeze!

You start your deicers, and everything's nice,
But you can't help wondering, "How much ice?"
Then the props throw it off with many a thud,
And your copilot seems to be sweating blood.

The "multiples" get you as you fly along—
(Your engines, you hope, will keep singing their song)
It's an A! It's an N! It's an "on course" you find,
Either you or the beam is out of its mind.
You are cleared to four thousand and "Range Control."
Now you feel like you're "out" but still on parole.

You report, "Leaving three thousand at zero nine,"
And hope the guys hurry up at the front of the line.

The Kollsman is set twenty-nine twenty-eight,
And you keep dropping down at the standard rate
The wind, northeast twenty, and runway three—
"We can land straight in," you chuckle with glee.

You're now at three thousand, and everything's set,
You're going to do this without missing a bet!
As your volume picks up, and you near the station,
Your copilot gives you a sick'ning sensation.

"The ceiling's three hundred, visibility a half,"
He's tired too, but he squeezes a laugh.
You were almost ready to call the tower
Of the airport named for the "Little Flower."

But now you must "up gear" and pour on the coal,
And wait 'til you're told what now is your goal.
You bore up to two thousand on the northeast leg,
And you curse aloud as a new clearance you beg.

To make a long story short, you go to "Philly,"
And you muse to yourself, "I guess I'm silly."
"I wish I were a fireman, or on the force,
Or back on the farm, following a horse."

Then you land your ship all safe and sound,
And a few of your passengers gather 'round.
As you look at their faces, you know you're a liar,
When you tell yourself you'd be ought but a flyer.

—By Pilot "Dick" Dice, EAL

* * *

AERIAL VIRTUOSITY

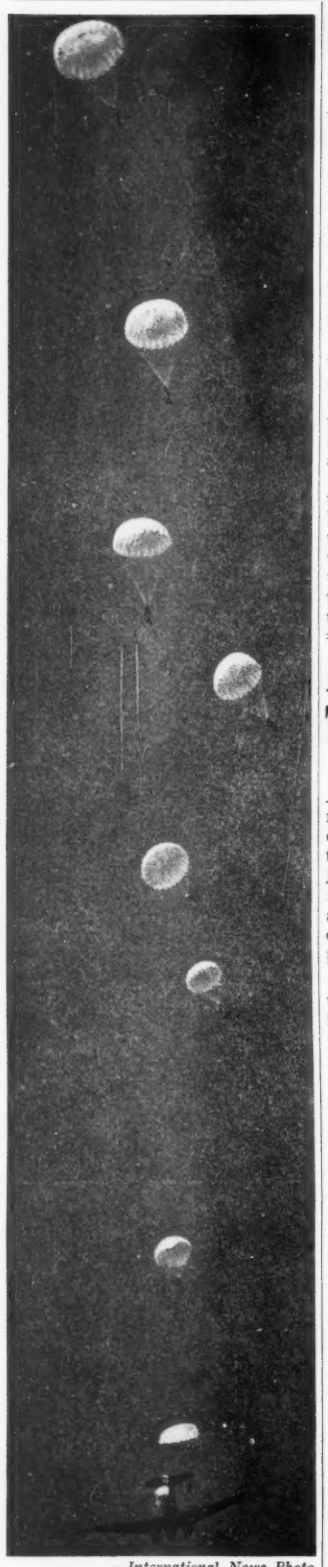
A music critic recently wrote the following item in a metropolitan newspaper: "Here is music in hot jazz style. Paul Nero has composed and plays a suite called *Solo Flight* (Decca three ten-inch records, $2.75). The movements are subtitled *Contact, Take-Off, On the Beam, In the Blue, Tailspin,* and *Happy Landing.* With guitar and string bass support, he writes and plays with 'hot' virtuosity."

* * *

MATHEMATICAL VERBOSITY

The bituminous coal operators and bushy-haired beetle-browed John L. Lewis, head of the United Mine Workers, were doing a bit of negotiating. Charles O'Neill, spokesman for the operators, had been expounding many-digit figures with reckless abandon. Finally, the great Mr. Lewis came up shaking his mane and replied: "If Mr. O'Neill has a weakness, I would say it was the mad abandon with which he hurls huge sums of money about. I would say he has become slightly inebriated by the exuberance of his own mathematical verbosity." Try to tie that, if you dare—you emasculators of the American language!

UNIVERSITY APR 9 1941



—International News Photo

SKY TROOPS ***These are not rose petals fluttering down in the spring breezes, but a squad of our country's deadly parachute troops training to defend the homes, families, and enterprises of free men — something the ravaging hordes of Europe wouldn't understand.***

Final Contract—

(Continued from Page 1)

the pilots and the company had no control.

Since the first of 1941, eleven days have been spent in conferences with Pan American-Grace Airways and this contract is rapidly nearing completion.

Contract-amending conferences are in progress on American and TWA.

Written Agreements Prove Worth

No one can dispute the proven worth of employment contracts and the skeptics need only to be reminded of this fact by observing the splendid carrier-pilot relationship that came into being with the advent of written agreements.

The CAB accident investigations, and various other hearings, have been holding the center of the stage. The coming of spring will change all this and everyone will again be able to get back to the job of building a great industry—air transportation.

Altitude and The Airman

(Continued from Page 4)

rate to return to more normal levels at the lower altitudes (10,000 to 12,000 feet), provided the subject acclimatizes fairly well and remains at rest. At the higher altitudes, however, this does not occur.

Pulse Rate Increases

The average increase appeared to be significant statistically during the first 20 minutes at 12,000 feet; however, the mean pulse rate dropped to the control level by the end of the first hour. At 14,000 feet and above, the mean pulse rate remained significantly higher throughout each experimental period. The first significant increase during slow ascents was at 16,000 feet.

In comparing the alterations in pulse rate during rapid and slow ascents, i. e., attaining the simulated altitudes within 15 to 30 minutes as contrasted with 1 hour and 15 minutes to 1 hour and 30 minutes, the variations appear to be less extreme if the person's body has a longer time to become acclimatized.

Blood Pressure

The changes in blood pressure with increasing altitude were not as consistent as the alterations in pulse rate. At the moderate altitudes most subjects reacted with an initial increase in systolic pressure followed by a well-controlled fall to normal values. An extreme rise or fall usually indicated poor acclimatization. In contrasting the rapid and slow ascents of 16,000 feet, both the initial increase and prolonged effects in the systolic and diastolic pressures were higher during and following the rapid ascents.

The Lung Oxygen and Carbon Dioxide

On the average, the partial pressure of oxygen is significantly higher and the carbon dioxide lower in acclimatized subjects compared to unacclimatized ones. In contrasting the two rates of ascent in this experiment, the partial pressure of oxygen was higher following the slow ascents compared to the rapid ones, indicating a significant advantage in ascending slowly.

Greene Explains Aero-Medical Research

Dr. Ralph Greene's talk, given before the 1940 convention of the Air Line Pilots Association on the morning of December 1, is appearing in the AIR LINE PILOT in serial form. Following is the fourth installment:

Radium Paint Research

The medical department does not attempt to usurp the prerogatives of any other department and refrains from offering suggestions or opinions except when there is a definite medical implication. There has been some research work initiated by Eastern Air Lines' medical department in connection with radium paint aboard our ships. This work has been followed through by the country's outstanding experts. The final conclusion is that the pilot is being exposed to radon gas well within the limits of tolerance. On the economical side, the research about radium paint has indicated the ways and means of a substitute which is entirely harmless and is gradually being almost universally adopted in airplane instrument board construction.

Radio Operators and Dispatchers Subject to Physical Examinations

It has been our privilege to advance the thought that certain ground personnel, such as radio operators and dispatchers, are so vitally important to a given flight that the question of human failure has definite implications. We have, therefore, subjected our radio operators and dispatchers to physical examinations to determine that their senses of hearing are unimpaired, and that they have no defect of mind or body that would suggest the possibility of sudden human failure. In the inspection service, we are interested to know that those who are responsible for maintenance of the electrical equipment have normal color vision. It is our information that tracing out the circuits is somewhat dependent upon the color of the insulation which surrounds the wires. We are also advocating that those who work on the side of inspection be examined for unimpaired hearing, particularly in the high tones. It has been suggested that a broken ball bearing in a Fletner control may be discovered because of its click as the result of motion in manipulating the control.

Pilot Need Not Demonstrate Perfect Hearing in Both Ears

The pilot, unlike the radio operator, the latter using a split headphone set, requiring hearing of voice in one ear, code in the other ear, and perhaps a message from a loud speaker, does not, in our opinion, have to demonstrate perfect hearing in both ears. We are willing to advocate that if he is the victim of considerable impairment of hearing in one ear, with normal hearing in the other ear, he can function satisfactorily. In a case of this kind, we wish to note that he does not have a disease of the middle ear which would cause him to become dizzy.

Conduct Electrocardiographic Studies in Cases of All Pilots

Among other refinements, the medical department secures an electrocardiographic study in the cases of all pilots. One may listen to the heart and be unable to identify serious heart muscle damage, a condition which may be demonstrable only by the securance of a heart tracing. These tracings have been properly termed the finger prints of the heart. From year to year, with the accumulation of heart tracings and by comparison thereof, it will be possible to detect incipient changes that are suggestive of progressive heart muscle damage. Serious heart muscle damage is not necessarily characteristic of advancing years for cases may occur even in childhood.

Use X-Ray on Lungs and Heart

We indulge in certain X-ray studies to determine that the lungs are healthy and that the heart is not enlarged and that there is otherwise absence of serious chest disease or defect. Cases of incipient tuberculosis have been discovered by these means among pilots. Those of which I have knowledge were given necessary rest and treatment; no deaths have occurred, and in each case, the pilot is again functioning satisfactorily and in good health, as an air line pilot.

Study Ground Position Pilot Can Best Fill in Case of Physical Disqualification

The question of educational requirements for pilots has been raised. As yet, no standards have been established. It is our practice to inquire into the education, industrial and business experience of the pilot along with his degree of intelligence and the manner in which he has taken advantage of his training and environment. Our purpose in this respect is to place ourselves in position to recommend the manner in which a pilot could best serve the company in a ground position if, perchance, due to disease or accident, he might eventually become physically disqualified for piloting duties.

Rigid Requirements for Commercial Licenses

Among applicants for pilot positions, it has been noted that there is an increase in physical defects in those who have been trained in civilian circles and have consequently not been subjected to the rigid physical requirements of the military establishments. It appears that for a time on the side of licensure, the securance of a student pilot's license or a private pilot's license did not require the application of the most rigid requirements for pilots in commercial grades. As a result, there have been isolated instances where young men, ready to enter the service of an air line, have been found to have physical defects which are disqualifying and which have existed throughout their lives and which could have been recognized on the initial medical examination for a license. It would have been possible to have then informed the applicant that his condition of health precluded the possibility of progressing to the commercial grades. It is our understanding that this defect has now been overcome and that the Civil Aeronautics Authority has taken the precaution to determine in the beginning if the applicant's state of health seems to indicate that he will eventually be able to qualify physically in the commercial grades.

Veteran Pilots 100 Per Cent Efficient

The performance of four pilots, who are in the veteran class, may be classified on the side of efficiency as being 100 per cent. These pilots are calm. They are not in an apprehensive, conjectural state of mind as to the crises that may confront them for those experiences, illustratively speaking, are waters that have long ago passed beneath the bridge. While some of our pilots who wear glasses are self-conscious because they suspect the passengers may view them as patriarchs, I am, at all times, comfortable and confident when aboard the ship which is in command of one of our veteran pilots.

Attack Problem of Water and Food Contamination in Foreign Lands

On the side of research, it has been the privilege of the medical department of Eastern Air Lines to attack the problem of water and food contamination so widely prevalent in foreign lands. Among the pilots engaged in international flying, we found a rather high incidence of tropical disease. All the pilots have been adequately treated, have been restored to an excellent state of health, and have been relieved from infections, particularly amebic dysentery, which, if unrecognized and untreated, would have, in all probability, resulted in serious invalidism. Likewise, the problem of protecting food and water, a problem that was regarded as insoluble, has been successfully attacked. Thus, there has been extended, not only to the pilot, an adequate protection, but a similar safeguard has been thrown around the many thousands of air line passengers who, in corresponding numbers, are utilizing the facilities of international air lines.

LATE NEWS

(Continued from Page 7)

vice-president of TWA, has been appointed president and general manager of a new air line company—the Southwest Feeder Airlines, Inc., with offices at 30 Pine Street, New York City, and the Ramsey Tower in Oklahoma City. Hardin is currently holding forth in the company's Oklahoma City office. He recently returned from South America where he spent several months as a technical consultant to the CAB. Tom's rise has been phenomenal, and the pilots wish him every success in his new undertaking.

Training

The United States Navy is preparing to train 15,000 additional pilots. Applicants must be between the ages of twenty and twenty-seven and must have had at least two years of college. The course of training will be completed in eight months, after which the graduates will be commissioned as ensigns. It is reported that the Navy expects to turn out new pilots at the rate of 1,000 a month.

80,000

O. P. M. Director General Knudsen was recently quoted in Washington on good authority as having stated, "We will be turning out 80,000 planes before we're through."

CONSTRUCTION **The Oakland Municipal Airport under construction—total area 1,200 acres. Just beyond the Oakland Airport (at the top center) is the new $20,000,000 Alameda Naval Air Station. The San Francisco-Oakland Bay Bridge is also shown, with the Golden Gate Bridge seen faintly at the upper left.**